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**OFFICIAL**

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**FROM: Winston Hsu, PATENT AGENT, REG. NO. : 41,526**

**SERIAL NO.: 09/683,482**

**ATTORNEY DOCKET NO.: ADTP0028USA**

**SUBJECT: INFORMATION DISCLOSURE STATEMENT**

**TOTAL PAGES: 12 PAGES (INCLUDING COVER PAGE)**

**Winston Hsu 2004/02/25**

**ADTP0028USA5\_D1\_1**

PTC/SB/97 (08-00)  
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APPLICATION NUMBER: 09/683,482

PAPERS INCLUDED:

(1) Transmittal Form	1 PAGE
(2) Fee Transmittal	1 PAGE
(3) Information Disclosure Statement	8 PAGES

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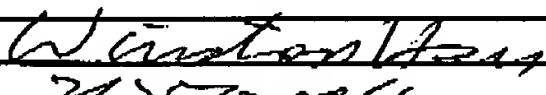
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<b>TRANSMITTAL FORM</b>  (to be used for all correspondence after initial filing)	Application Number	09/683,482
	Filing Date	01/07/2002
	First Named Inventor	Jia-Fam Wong
	Art Unit	2871
	Examiner Name	RUDE, TIMOTHY L
	Attorney Docket Number	ADTP0028USA
Total Number of Pages in This Submission		10

ENCLOSURES (Check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance communication to Technology Center (TC)
<input type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Amendment/Reply	<input type="checkbox"/> Petition	<input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Affidavits/declaration(s)	<input type="checkbox"/> Power of Attorney, Revocation	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Change of Correspondence Address	<input type="checkbox"/> Other Enclosure(s) (please identify below):
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<input type="checkbox"/> Response to Missing Parts under 37 CFR 1.62 or 1.63		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	Winston Hsu, Reg. No.: 41,526
Signature	
Date	2/25/2004

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Signature		Date	

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**FEE TRANSMITTAL**  
**for FY 2004**

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27**TOTAL AMOUNT OF PAYMENT** (\$)**180.00****Complete if Known**

Application Number	09/683,482
Filing Date	01/07/2002
First Named Inventor	Jia-Fam Wong
Examiner Name	RUDE, TIMOTHY L
Art Unit	2871
Attorney Docket No.	ADTP0028USA

**METHOD OF PAYMENT (check all that apply)**☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None☒ Deposit Account:Deposit  
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☒ Charge fee(s) indicated below ☒ Credit any overpayments☒ Charge any additional fee(s) or any underpayment of fee(s)☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.**FEE CALCULATION****1. BASIC FILING FEE**

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	
<b>SUBTOTAL (1)</b>					<b>(\$)<b>0.00</b></b>

**2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE**

Total Claims		Extra Claims		Fee from below		Fee Paid	
Independent		-20** =		X			
Multiple Dependent		-3** =		X			

Large Entity		Small Entity		Fee Description
Fee Code	Fee (\$)	Fee Code	Fee (\$)	
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

**SUBTOTAL (2)** (\$)**0.00**

\*\*or number previously paid, if greater. For Reissues, see above

**FEE CALCULATION (continued)****3. ADDITIONAL FEES**

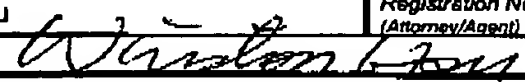
Large Entity Small Entity

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for ex parte reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1480	130	1480	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	180.00
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify)

\*Reduced by Basic Filing Fee Paid

**SUBTOTAL (3)** (\$)**180.00****SUBMITTED BY**

Name (Print/Type)	Winston Hsu	Registration No. (Attorney/Agent)	41,526	Telephone	886289237350
Signature		Date	2/25/2004		

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PATENT

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Jia-Fam Wong                      Examiner: RUDE, TIMOTHY L  
5 Filing Date: 01/07/2002                      Art Unit: 2871  
Serial No.: 09/683,482                      Docket No.: ADTP0028USA

Title: LIQUID CYRSTAL DISPLAY WITH A LOW DRIVING VOLTAGE

10 To: Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Subject: Information disclosure statement Under  
15 37C.F.R.§1.56 and 37C.F.R.§1.97(c).

Dear Sir:

20 This is an Information Disclosure Statement in  
accordance with the duty to disclose information  
material to patentability under 37 C.F.R. §1.56.  
Applicants wish to make of record the documents listed  
on the accompanying form PTO/SB/08. It is respectfully  
requested that the Examiner initials the cited  
25 references on the form and that it be made of record  
in the application and that a copy of the initialed  
form be sent to Applicants with the next communication  
from the Examiner.

30 Since the information disclosure statement is filed  
before the mailing date of any of a final action, the  
requirement set forth in §1.97(c) is satisfied. The

prior art patents contained in the information disclosure statement were cited in communications from the Taiwan Intellectual Property Office on 01/07/2004. Applicant sincerely hopes that the examiner can  
5 consider the items contained in the information disclosure statement.

According to the requirement set forth in 37C.F.R. §1.98 and M.P.E.P. 609 (8<sup>th</sup> edition, Aug. 2001),  
10 the applicant is submitting copies of the references cited by the Taiwan Intellectual Property Office (US Patent No. 5995186, granted Nov. 30, 1999) and a concise explanation of the relevance in this application hereinafter.

15

US Patent No. 5995186 discloses a parallel field liquid crystal display having straight data and common electrodes inclined at an angle to a gate line. The in-plane switching mode LCD (IPS LCD) comprises a first  
20 substrate 27 and a second substrate 26 opposite and parallel to the first substrate 27, an alignment layer 59 disposed on an inner surface of the first substrate 27, a polarizer 63 disposed on an outer surface of the first substrate 27, an alignment layer 62 disposed on  
25 an inner surface of the second substrate 26, and an analyzer 64 disposed on an outer surface of the second substrate 26. The IPS LCD further comprises straight and parallel data electrodes 48 and common electrodes 49 disposed on the inner surface of the first substrate  
30 27, and a liquid crystal layer 60 injected between the first substrate 27 and the second substrate 26 (refer to Fig.(2) of the cited prior art).

The data electrode 48 is 95° to the gate line 41. The alignment layer 59, the alignment layer 62, and the analyzer is 90° to the gate line 41. The polarizer  
5 63 is 0° to the gate line 41 (refer to Fig.(3) of the cited prior art) . When no voltage is applied between the data electrode 48 and the common electrode 49, all of the liquid crystal molecules are aligned parallel to the first substrate 27 and the second substrate 26,  
10 and parallel to the principle transmission axis of the analyzer 64. By forming the data electrode 48 and the common electrode 49 slant to the gate line 41, the viewing angle inverted problem is greatly improved such that the viewing angle inverted areas only appear  
15 at the corners of the display. When a voltage is applied between the data electrode 48 and the common electrode 49, an electric field 13, which is 5° to the gate line 41, is produced between the data electrode 48 and the common electrode 49. At this time, the liquid crystal  
20 molecules 77 adjacent to the first substrate 27 are rotated to the electric field direction; the liquid crystal molecules 78 adjacent to the second substrate 26 are subject to an electric field below the threshold electric field so that the liquid crystal molecules  
25 78 retain in the original direction. In this manner, the liquid crystal molecules are continuously twisted between the first substrate 27 and the second substrate 26. Polarized light having a polarized direction of the polarizer 63 is guided by the liquid crystal  
30 molecules to the perpendicular direction, which is parallel with the principle transmittance axis of analyzer 64. As a result, a white state is obtained

(refer to Fig.(2) and Fig.(3) of the cited prior art).

Claim 1 of the present application is repeated here for reference:

5

1. A liquid crystal display (LCD) comprising:  
a first substrate comprising a first surface;  
a second substrate comprising a second surface, the  
second surface being in parallel with and  
10 opposite to the first surface of the first  
substrate, and a pixel area being defined on the  
second surface;  
a first common electrode positioned on the first  
surface of the first substrate;  
15 a pixel electrode disposed above the pixel region  
of the second substrate, the second electrode  
having a first slit elongated along a first  
direction;  
an isolation layer disposed on the surface of the  
20 second substrate to cover the pixel electrode;  
a second common electrode disposed on the isolation  
layer and within the pixel region, a second slit  
being defined on the second common electrode and  
along the first direction, the first and second  
25 slits being interlaced; and  
a plurality of anisotropic liquid crystal molecules  
with negative dielectric constant positioned  
between the first common electrode and the  
second common electrode, the longitudinal axis  
30 of the liquid crystal molecules being positioned  
along a second direction horizontally, and a  
first angle being formed between the first



direction and the second direction;  
wherein a biased electric field is formed as a voltage  
is applied between the first common electrode  
and the pixel electrode,  
5 such that (a) a first horizontal biased electric  
field is formed in the neighborhood of the  
second slit, the first horizontal biased  
electric field is perpendicular to the first  
direction, and the liquid crystal molecules  
10 are rotated to make the longitudinal axis of  
the liquid crystal molecules in the  
neighborhood of the second slit being in  
parallel to the first direction,  
(b) the longitudinal axis of the liquid crystal  
15 molecules in the neighborhood of the first  
common electrode maintain along the second  
direction because no horizontal biased  
electrical field is formed near the first  
common electrode, and  
20 (c) the liquid crystal molecules between the  
first common electrode and the second slit of  
the second common electrode gradually rotate  
from the second direction to the first  
direction."

25

Compared with US Patent No. 5995186, the present  
application liquid crystal display is not only an IPS  
LCD, but is also featured in having an upper common  
electrode disposed on a lower surface of a top  
30 substrate. Therefore, two horizontal biased electric  
fields and two vertical biased electrical fields are  
provided by a biased electric field 120 formed between

the upper common electrode 104 and the pixel electrode 208 and a biased electric field 220 formed between the lower common electrode 210 and the pixel electrode 208. Under the circumstances, the rotation of the liquid crystal molecules 40 are accelerated by both the horizontal biased electric field 1201 of the biased electric field 120 and the horizontal biased electric field (not shown) of the biased electric field 220. In addition, the vertical biased electric field 1202 of the biased electric field 120 will maintain the liquid crystal molecules 40 to rotate on a fixed plane. As a result, the driving voltage is lowered, the rotation of the liquid crystal molecules 40 is accelerated, and the wide view angle is obtained.

15

In the cited prior art, not any electrode is disposed on the lower surface of the second substrate 26. Therefore, it is impossible to produce the same number of components of biased electric fields. Furthermore, there is no vertical biased electric field produced between the first substrate 27 and the second substrate 26 to maintain the liquid crystal molecules to rotate on the fixed plane. In summary, the performance of the IPS LCD in the cited prior art is not equivalent to the performance of the present application LCD.

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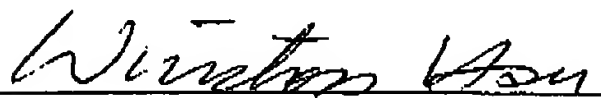
It is clear that the LCD disclosed in the present application has a different structure and different function from the IPS LCD disclosed in the cited prior arts.

30

Since claim 1 of the present application is substantially different from the prior art patent US Patent No. 5995186, and all other claims are dependent on claim 1, a quick allowance of the present  
5 application is sincerely requested.

Sincerely,

10



Date: 2/25/2004

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communication and I will return your call promptly.)

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